

2/28/2005

App. No. 09/682,070

In the Claims:

1-23 (cancelled)

24. (new) A method for managing the routing in a multi-hop network, the method comprising the steps of:

Having a node with a micro-controller means, a RF transceiver means, data storage means, a network interface means with an input buffer, output buffer and auxiliary buffer and a serial device communication means;

Having the data storage means store a plurality of node addresses and configuration data forming an address table;

Having a plurality of serial devices;

Having the messages contain a header at the beginning of the message with the fields sender node address, transmitter node address, receiver node address and destination node address;

Processing a message to a node from the serial device to network by receiving the message from the serial device, storing the message in the input buffer, copying the message to the output buffer, and transmitting the message to the network;

Processing a message to a node from a serial device to the same serial device by receiving the message from the serial device, storing the message in the input buffer, copying the message is copied to the output buffer and transmitting the message to the serial device;

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Processing a message to a node from the network to a serial ^{device} by receiving the message from the input buffer, ⁱⁿ storing the message ⁱⁿ the auxiliary buffer, copying the message to the output buffer, and transmitting the message to the serial device;

Processing a message to a node from the network to the network by receiving the message from the input buffer, ⁱⁿ storing the message ⁱⁿ the auxiliary buffer, copying the message to the output buffer, and transmitting the message to the network;

Processing a message by having a sender node send the message, having a plurality of nodes receive and re-transmit the message until the destination node receives the message;

Processing a message from the network to a node by comparing the node's address with the destination node address; if the address does not match, the message is a retransmission message and the node searches for the next node and retransmits the message, if the address matches, the message is tested to determine if the message is a network command, if the message is a network command, the network command will be executed by the node, if the message is not a network command, the message is sent to the serial device, if an acknowledgement is required the node sends a request response message to the serial device, after the node receives the acknowledgement from serial device the node sends an acknowledgement to the sender node;

having said network interface means consists of an input buffer and an output buffer located internal on the microcontroller means;

having said header contains the fields sender node address, transmitter node address, receiver node address, destination node address, length, frame tag, data string and cyclic redundancy check; and

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1. ~~*~~ having a sender first node send its update address table to a plurality of other node, then having said 37
neighborhood nodes send acknowledge messages to the sender, having said sender sort said plurality of
nodes by their addresses, then having said sender requiring of each one of the plurality of nodes its node
address table in order to complete the entire network, if a node does not send an acknowledgement
message, it will then appear as a node behind another node, correcting this error condition when said node
and another node exchange messages between them and when said the sender first node has a complete
table, having said sender first node send messages to each node in the network to include its address in
others' node address tables.

/25. (new) The method of claim 24 in which said microcontroller means is an 8-bit micro-controller.

/26. (new) The method of claim 24 in which said serial device is a DSU.

/27. (new) The method of claim 24 where each node has one DSU.

28. (new) The method of claim 24 in which each node has two interfaces; one interface is node to serial
device and one interface is ^{*}a to the net, with an input buffer and an output buffer.

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